

REMARKS

Claims 1-24 and 44-49 are pending; claims 25-43 stand withdrawn. Claims 1 and 44 are amended. Claims 46-49 are newly added. Support for the amendments and new claims can be found throughout the specification, for example, at paragraphs 0038-0047; and in the Figures, e.g., FIG. 2. No new matter has been added.

Rejection under 35 U.S.C. § 103(a)

Claims 1-24, and 44-45 have been rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent Application Publication No. 2006/0160205 to Blackburn et al. ("Blackburn") in view of U.S. Patent Application Publication No. 2002/0150933 by Ehricht et al. ("Ehricht"), U.S. Patent No. 5,856,174 to Lipshutz et al. ("Lipshutz"), and U.S. Patent Application Publication No. 2003/0091477 to Paul et al. ("Paul"). Office Action at 3. Applicants respectfully disagree. Claims 1 and 44 are independent.

Claim 1 relates to a device for holding a substance library carrier. The device includes two holding elements that are fixable with each other, and that hold a layer composite that includes: (i) solid a lid element having a detection surface with a substance library on its underneath side and being optically translucent at least in an area of the detection surface, (ii) a sealing intermediate element having an enclosed recess; and (iii) a solid base element being optically translucent at least in an area of the detection surface of the lid element. The lid element, the intermediate element and the base element are held together between the two fixed holding elements to form a closed optically translucent chamber having a chamber space. The volume of the chamber space is coextensive with the volume of the enclosed recess. See claim 1.

Claim 44 relates to a first device for filling a second device for holding a substance library carrier. The second device includes two holding elements that are fixable with each other, and that hold a layer composite as described above. See claim 44.

Applicants respectfully disagree that the claims are obvious over the cited references. To briefly summarize the discussion below, the references (whether considered alone or in

combination) do not teach all of the limitations, and there is no motivation to combine features of the references to arrive at a device described in the claims.

Blackburn

Blackburn relates generally to biochip multiplexing (abstract). Cartridges are described in which a biochip substrate serves as one "half" of a reaction chamber, and a housing as the other "half." Blackburn at 0132. A separate sealing mechanism is not required for such cartridges. *Id.*

The Examiner argues that Blackburn further teaches, at paragraph 0088, that the reaction chamber has "inlet ports comprising a seal, and wherein the seal comprises a gasket, reading on a sealing intermediate." Office Action at 5.

Applicants traverse the claim that the "gasket" referred to at paragraph 0088 reads on the sealing intermediate of the instant claims. The relevant portion of Blackburn explains that an "inlet port may optionally comprise a seal . . . (as depicted in FIG. 3C and 14B) the seal comprises a gasket, or valve through which a pipette or syringe can be pushed." (emphasis added). Blackburn does not describe a structural relationship among the gasket, a lid element, and a base element--there is no indication that the gasket is intermediate a lid element and a base element.

The Examiner argues that a gasket provides "a 'recess' and the volume in the 'recess' can provide an open volume or can be filled (e.g. similar to an o-ring)." Advisory Action at 2. However, Blackburn does not describe a device in which the volume of the chamber space is coextensive with the volume of the enclosed recess. Even if the gasket of Blackburn is considered to have an enclosed recess (which Applicants do not concede), the gasket is taught as being part of a seal on an inlet port. The volume of the reaction chamber is defined primarily by the biochip substrate and the cartridge housing (see, e.g. FIGS. 3C and 14B of Blackburn).

Applicants agree with the Examiner's conclusion that Blackburn does not teach holding elements that hold a layer composite having a lid element, intermediate element, and base element.

Ehricht

The Examiner argues that Ehricht "discloses two holding elements that are fixable with each other (for example, see figure 1 [sic, figure 2] wherein the 'two sides' of element 42 represent 'holding elements' and they are 'fixed' at a distance equal to the length of element 2.)" See the Office Action at page 7. Applicants respectfully disagree.

The Examiner misinterprets figures 1-2 of Ehricht. Ehricht does not disclose "two holding elements that are fixable with each other" as the Examiner asserts, but instead a **single** chamber body (element 1). See, e.g., paragraph 0055: "Device 20 . . . consists of a chamber body 1 . . ." Figures 1 and 2 of Ehricht are reproduced below for reference.

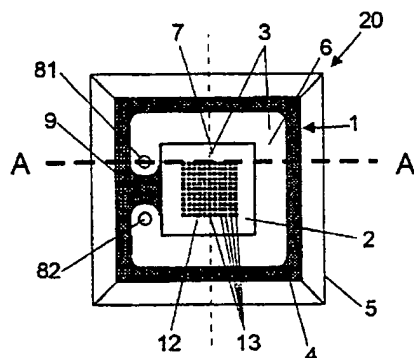


Fig. 1

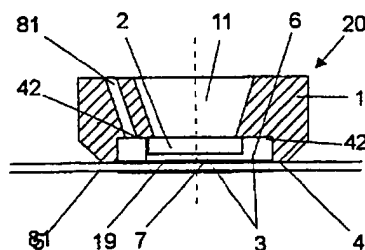


Fig. 2

Thus, Ehricht does not teach **two** holding elements that are fixable with each other.

According to the Examiner, Ehricht does teach such an element, specifically "a chamber body and chamber support wherein the chamber body is provided with a bearing surface via which chamber body is in a sealing connection with chamber support, so that a sample chamber is formed." Office Action at 7. Applicants respectfully disagree that the description of a chamber body "in a sealing connection" with a chamber support can reasonably be interpreted as teaching a sealing intermediate element having an enclosed recess.

Ehricht describe a device having two elements (i.e., a chamber body and a chamber support) in a sealing connection with one another. There is no third, intermediate element. Rather, the sealing connection is "by means of an adhesive connection or weld connection" (Ehricht at 4, paragraph 0055).

The present claims, however, recite a device having **three** elements: (i) a lid element; (ii) a sealing intermediate element; and (iii) a base element. For example, compare FIGS. 2 and 5 of Ehricht (showing chamber body 1 and chamber support 5) with FIG. 2 of the present application (showing lid element 200, sealing intermediate element 300, and base element 400, as well as holding elements 101 and 102; see the specification, e.g., at 6, paragraph 0029). The specification describes that in one embodiment, the device includes a "layered reaction chamber 500 consisting of the base element 400, the intermediate element 300, and the lid element 200 . . . mounted in the holding elements 101 and 102 that may be engaged with one another." Specification at 15, paragraph 0058.

Applicants respectfully ask that the Examiner clarify the status of the rejection under § 102(e) over Ehricht (Office Action at 6, last paragraph).

Lipshutz

The Examiner argues that Lipshutz "teaches in **column 19, lines 20-29** . . . use of an oligonucleotide array (substance library carrier as the bottom surface of a chamber," and "[i]n **column 27, lines 1-3** . . . that the base unit [may] include a second surface which contacts the opposite surface of the device." (emphasis added) (Office Action at 11-12). It is not clear that Lipshutz is describing a single device in these passages selected from disparate portions of the disclosure. Nevertheless, neither the passages mentioned above, nor any other part of Lipshutz, describes a device including two holding elements that are fixable with each other, and that form a layer composite that includes **a sealing intermediate element having an enclosed recess**.

The Examiner argues that a gasket (Lipshutz refers to a sealable closure or septum, col. 18, lines 5-19) provides "a 'recess' and the volume in the 'recess' can provide an open volume or can be filled (e.g. similar to an o-ring)." Advisory Action at 2. However, Lipshutz does not describe a device in which the volume of the chamber space is coextensive with the volume of

the enclosed recess. Even if the septum of Lipshutz is considered to have an enclosed recess (which Applicants do not concede), the septum is taught as being part of a sealable closure on a opening to the outside of the device (i.e., an inlet). The volume of the reaction chamber is defined primarily by the molded or machined wells of a polymeric part (Lipshutz at col. 15, line 48 to col. 16, line 2).

Paul

Paul describes a system for hybridization assays that includes a cartridge for housing an array device. The Examiner, with reference to Fig. 3 of Paul, argues that "at least elements 350 and 310 serve as fixed holding elements."

Paul relates to a chip holder and a cartridge for the chip holder, which are particularly adapted for a flow-thru chip (FTC) (Paul at paragraphs 0011-0016).

Paul does not describe a device having a solid lid element, a sealing intermediate, and a solid base element, where the lid element, the intermediate element and the base element are held together between two fixed holding elements to form a closed chamber having a chamber space. In contrast, the nature of an FTC requires a fluid inlet and outlet so as to permit flow through the chip. In other words, the chamber in the device discussed by Paul is necessarily not a closed chamber.

The Examiner has not directly addressed the content of Paul with regard to a sealing intermediate element. Nevertheless, Paul explains that

... upper seal(s) 333, 334, [] can be a single seal, as shown in FIG. 6B. The single upper seal 335 further includes a hole 336 and a slot or channel 337. The location of hole 336 corresponds to the location of the exit hole 429 (FIG. 4D), which directs test (or process) fluid that has passed through the FTC to the exit guide hole 409 and out of the FTC cartridge.

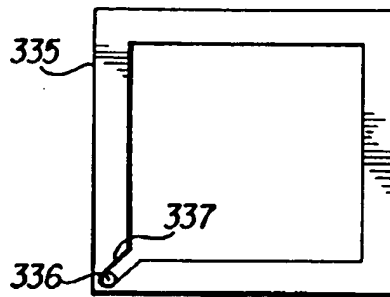


FIG. 6B

Paul at paragraphs 0083-0084 and FIG. 6B. The above passage and figure clearly contemplate a flow through device. The slot, channel and exit hole are inconsistent with a sealing intermediate element having an **enclosed** recess. Paul's flow through device, rather than enclosing a fluid, permits flow.

Because the chip holder is used with an FTC, it includes a port for passing test fluid into the test fluid chamber. The holding device of Paul is intended for use with a FTC, where the array is immobilized inside the channels of the FTC. Nowhere does Paul teach, suggest, or motivate using the holding device with a "flat surface" array. Paul contrasts FTC devices with "flat surface" substrates (*Id.* at paragraph 0003). According to Paul, other FTC holders are associated with difficulties such as leaking and insufficient flow control (paragraphs 0007-0008). Paul then explains why "conventional gene chip array holders (or cartridges). . . operate[] with a non-flow-through substrate. . . . Therefore, this type of conventional design is inadequate to address fluid flow and leakage issues." *Id.* at paragraphs 0009-0010. Paul thus actively discourages the combination the FTC devices with non-flow-through devices. Blackburn, Ehricht, and Lipshutz are all concerned with devices that operate with a non-flow-through substrate. Thus, Paul teaches away from combination with the teachings of Blackburn, Ehricht, and Lipshutz. Combining references is improper where the references teach away from their combination. See, e.g., MPEP 2145 X.D and 2141.02. For at least this reason, the instant claims are nonobvious over Blackburn, Ehricht, Lipshutz and Paul. Applicants therefore respectfully ask that the Examiner reconsider and withdraw the rejection.

Combination of the references

Nothing in the references provides a teaching, suggestion, or motivation to supply the missing elements, nor does common sense or skill in the art supply what the references lack. Here, the references, when considered together, do not teach, suggest, or motivate a person having ordinary skill in the art to make a device including two holding elements that are fixable with each other, and that hold a layer composite which includes a solid lid element, a sealing intermediate element having an enclosed recess, and a solid base element; where the lid element, the intermediate element and the base element are held together between the two fixed holding elements to form a closed optically translucent chamber having a chamber space, the volume of the chamber space being coextensive with the volume of the enclosed recess.

Even if the art of record taught all of the features detailed in claim 1 (which Applicants do not concede), there is no motivation to combine those features to arrive at the claimed device. For example, Ehricht does not teach a sealing intermediate element. Blackburn and Lipshutz teach a gasket and a septum, respectively, as seals for inlet ports. Even if the gasket and/or septum are considered to have an enclosed recess, neither Blackburn nor Lipshutz teaches or suggests a configuration where the volume of a closed chamber space is coextensive with the volume of the enclosed recess. Paul teaches a device that includes a sealing element positioned between a flow through cell and a window. It does not teach a closed chamber space; nor a closed chamber space that has a volume coextensive with the volume of the enclosed recess; nor that a lid, an intermediate element and a base element are held together to form a closed chamber. Even if the references teach the parts that appear in claim 1, there is no teaching, suggestion, or motivation to combine those parts in the manner (e.g., the structural relationships among the parts) described in claim 1.

Furthermore, Paul explicitly teaches away from devices like those discussed in Blackburn, Ehricht, and Paul, and therefore may not be properly combined with those references.

The Supreme Court has explained that to facilitate review of a determination of obviousness, the analysis of "interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art. . . should be made explicit." KSR

International Co. v. Teleflex Inc. 550 U.S. ____ (2007) (slip op. at 14) (citing *In re Kahn*, 441 F.3d 977, 988 (CA Fed. 2006) ("[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness")).

Here, the Examiner has failed to make any reasoning behind the combination of Blackburn, Ehricht, Lipshutz and Paul. For, example, there is no explanation of how the teachings of the references are "interrelated," only a laundry list of features allegedly taught by each reference. There is no reason to combine the various teachings in a way that would lead a person of ordinary skill to the devices of claims 1 or 44 or the claims that depend from them. In short, the Examiner has failed to make a *prima facie* case of obviousness. Applicants therefore respectfully ask that the rejection under § 103 be reconsidered and withdrawn.

Rejection under 35 U.S.C. § 102(e)

The Examiner has indicated that claims 1-4, 7-8, 10, 12 and 18-24 are anticipated by Ehricht under § 102(e). Office Action at 6, last paragraph. Applicants respectfully disagree. As detailed above, and in the response filed June 24, 2008, which is incorporated by reference, Ehricht does not describe each and every element of independent claim 1. Accordingly, the claims are not anticipated. Applicants respectfully ask that the Examiner reconsider and withdraw the rejection under § 102(e).

New claims

Claims 46-49 are new. Claim 46 depends from claim 1. Claims 48-49 depend from claim independent claim 47. Support for the new claims can be found throughout the specification, for example, at paragraphs 0038-0047; and in the Figures, e.g., FIG. 2. No new matter has been added. Applicants believe the new claims are patentable over the art of record, and respectfully ask that they be allowed.

Applicant : Torsten Schulz et al.
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CONCLUSION

Applicants ask that all claims be allowed. A petition for a two-month extension of time and the required fee are filed with this reply. Please apply any other charges or credits to deposit account 19-4293.

Respectfully submitted,

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